

MODERN GENETIC ANALYSIS: INTEGRATING GENES AND GENOMES. *Second Edition.*

By Anthony J F Griffiths, William M Gelbart, Richard C Lewontin, and Jeffrey H Miller. New York: W. H. Freeman. \$75.00. xxi + 736 p; ill.; index. ISBN: 0-7167-4382-5. 2002.

In 1976, David Suzuki and Anthony Griffiths published an undergraduate genetics textbook that used a classical *genetics-first* approach. It started with Mendel's contributions and emphasized that the historical development of the field of genetics is an instructive device to present important genetic concepts. Undergraduate genetics textbooks have extensively employed this approach in the past. *Modern Genetic Analysis* takes an alternative *genome-first* approach to introduce genetic principles. For example, there is no stand-alone chapter devoted to Mendelian principles in this book, as these are distributed in the context of molecular genetics in Chapters 2 through 6. Therefore, the emphasis is on integrating genes and genomes in a natural way to teach molecular genetics.

Modern Genetic Analysis contains 19 chapters, two appendixes, a glossary, a list of further readings, a section with answers to selected problems, and an extensive index. The volume begins with a description of DNA as the genetic material (Part 1) and proceeds to discuss methods of genetic manipulation by genetic engineering and mutations. An appreciation of genetic variation is provided at the outset. Gene and genome structures are presented in a comparative genomic approach. Gene function, DNA transmission, and inheritance of simple genetic differences are then illustrated elegantly. Part 2 of the book contains five chapters, which describe a wide array of genetic manipulation tools from traditional to modern approaches. The presentation is well motivated and the text is written in a lucid style. Connections between the blueprint of life and the phenotype are presented in Part 3. It consists of four chapters that cover topics from gene transcription and regulation to developmental genetics. The final three chapters comprise Part 4, which presents detailed discussion of the quantitative aspects of genetics, including population genetics, evolutionary genetics, and molecular evolution. The treatment of the subject matter in this section is advanced, but still highly accessible.

Genetics instructors might be faced with a decision to select between the widely used *An Introduction to Genetic Analysis* (A J F Griffiths et al. Seventh Edition. 2000. New York: W. H. Freeman and Company) and this relative newcomer *Modern Genetic Analysis*. The list of authors for each of these textbooks has a great deal of overlap. How do these books differ? *Modern Genetic Analysis* is a survey textbook with modern *genome-first* emphasis, whereas *An Introduction to Genetic Analysis* is a comprehensive textbook with classical *genetics-first* emphasis. Survey textbooks are usually shorter and are typically useful in introductory genetics courses intended for college sophomores with only rudimentary biology and chemistry backgrounds. Comprehensive volumes are usually much larger, provide more detailed explanations, and are typically used in advanced genetics courses aimed at college seniors with extensive backgrounds in biology and chemistry. In our view, *Modern Genetic Analysis* could easily be used for junior and senior undergraduate courses, as it is detailed enough for those interested in specializing in molecular genetics.

In the second edition, *Modern Genetic Analysis* places greater emphasis on bioinformatics by including Web-based tutorials and a resource list. In addition, the importance of population and evolutionary genetics is now underscored by devoting complete chapters on these topics. This is truly how modern genetic analysis differs from the classical genetic analysis. *Modern Genetic Analysis* captures this transition superbly and presents opportunities to genetics teachers to impart that knowledge in an easily accessible form to prepare undergraduates for tomorrow's research challenges in academic and commercial contexts.

SUDHIR KUMAR and STUART J NEWFELD, *Biology, Arizona State University, Tempe, Arizona*